

What is claimed is:

1. An apparatus for smoothing a surface of a rotatably supported substrate, said apparatus comprising:

- 5 a base plate having a surface;
a first block having an extending arm structure, said first block being attached to said base plate so as to be movable along said surface of said base plate;
a first roller defining an axial direction and being attached to a tip portion of said arm structure in a direction perpendicular to said surface of said base plate;
10 a first mobile member attached to said arm structure so as to be movable in a direction perpendicular to said axial direction;
a first tape-running means attached to said base plate for feeding and taking up a polishing tape through said first roller so as to advance said tape around said first mobile member; and
15 a first moving means attached to said arm structure of said first block for moving said first mobile member;
wherein said first mobile member has a first pad which presses said polishing tape from backside; and
wherein said first mobile member moves by means of said first moving means to
20 a retracted position where said first pad does not contact said polishing tape when said polishing tape is being run by means of said first tape-running means and to a compressing position where said first pad pushes said polishing tape when said substrate is being smoothed by said polishing tape.

25 2. The apparatus of claim 1 further comprising:

- a second block having an extending arm structure, said second block being attached to said base plate so as to be movable along said surface of said base plate opposite said first second block;
a second roller attached to a tip portion of said arm structure of said second block
30 in a direction perpendicular to said surface of said base plate;

a second mobile member attached to said arm structure of said second block so as to be movable in a direction perpendicular to the axial direction of said second roller;

a second tape-running means attached to said base plate for feeding and taking up another polishing tape through said second roller so as to advance said another tape
5 around said second mobile member; and

a second moving means attached to said arm structure of said second block for moving said second mobile member;

wherein said second mobile member has a second pad which presses said another polishing tape from backside; and

10 wherein said second mobile member moves by means of said second moving means to a retracted position where said second does not contact said another polishing tape when said another polishing tape is being run by means of said second tape-running means and to a compressing position where said second pad pushes said another polishing tape when the other surface of said substrate is being smoothed by said another
15 polishing tape.

3. The apparatus of claim 1 wherein said first pad is narrower than said polishing tape.

20 4. The apparatus of claim 2 wherein said first pad is narrower than said polishing tape and said second pad is narrower than said another tape.

5. An apparatus for smoothing a surface of a rotatably supported substrate, said apparatus comprising:
25 a base plate having a surface and an extending first arm structure;
a first roller defining an axial direction and being attached to a tip portion of said first arm structure in a direction perpendicular to said surface of said base plate;
a first block having a first mobile member extending along said first arm structure, said first block being attached to said base plate so as to be movable along said
30 surface of said base plate;

a first tape-running means attached to said base plate for feeding and taking up a polishing tape through said first roller so as to advance said tape around said first mobile member, and

5 a first moving means attached to said base plate for moving said first mobile member;

wherein said first mobile member has a first pad which presses said polishing tape from backside; and

wherein said first mobile member moves by means of said first moving means to a retracted position where said first pad does not contact said polishing tape when said
10 polishing tape is being run by means of said first tape-running means and to a compressing position where said first pad pushes said polishing tape when said substrate is being smoothed by said polishing tape.

6. The apparatus of claim 5 further comprising:

15 a second arm structure extending from said base plate parallel to said first extending arm structure such that said substrate can be disposed between said first and second arm structures;

a second roller attached to a tip portion of said second arm structure in a direction perpendicular to said surface of said base plate;

20 a second block having a second mobile member extending along said second arm structure, said second block being attached to said base plate so as to be movable opposite said first block;

a second tape-running means attached to said base plate for feeding and taking up another polishing tape through said second roller so as to advance said another tape
25 around said second mobile member; and

a second moving means attached to said base plate for moving said second mobile member;

wherein said second mobile member has a second pad which presses said another polishing tape from backside; and

30 wherein said second mobile member moves by means of said second moving means to a retracted position where said second does not contact said another polishing

tape when said another polishing tape is being run by means of said second tape-running means and to a compressing position where said second pad pushes said another polishing tape when the other surface of said substrate is being smoothed by said another polishing tape.

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7. The apparatus of claim 5 wherein said first pad is narrower than said polishing tape.

8. The apparatus of claim 6 wherein said first pad is narrower than said polishing tape and said second pad is narrower than said another tape.

9. A method of smoothing a surface of a substrate by using an apparatus selected from the group consisting of the apparatus of claim 1 and the apparatus of claim 5, said method comprising the steps of:

15 moving said first mobile member to a retracted position where said first pad does not contact said polishing tape when said polishing tape is fed and taken up; and

moving said first mobile member to a compressing position where said first pad pushes said polishing tape to said surface of said substrate.

20 10. The method of claim 9 wherein said first pad is narrower than said polishing tape.

11. A method of smoothing a surface of a substrate by using an apparatus selected from the group consisting of the apparatus of claim 2 and the apparatus of claim 25 6, said method comprising the steps of:

moving said first mobile member and said second mobile members each to a retracted position such that said first pad does not contact said polishing tape and said second pad does not contact said another polishing tape when said polishing tape and said another polishing tape are fed and taken up; and

30 moving said first mobile member and said second mobile member each to a compressing position such that said first pad pushes said polishing tape to said surface of

said substrate and said second pad pushes said another polishing tape to the opposite surface of said substrate.

12. The method of claim 11 wherein said first pad is narrower than said
5 polishing tape and said second pad is narrower than said another tape.